



An analytical framework for solutions of conflicting interests between climate change and biodiversity conservation laws on the example of Vienna/Austria

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ABSTRACT

Measures that aim to enhance different environmental assets are increasingly conflicting also in urban areas and there is a lack as well as a need for science-based assessment tools that also provide solution-oriented approaches which work in practice. This paper aims to provide a new analytical framework for conflicts of interest between such measures. The framework is applied to climate change and biodiversity (including ecosystem) conservation law as well as thereon based measures and tested on the example of a city embedded in different geopolitical governance levels.

The analysis is based on an in-depth literature review and develops an analytical framework in particular grounded upon differentiations between actions and inactions as well as between voluntary and compulsory activities.

When testing this framework for the Viennese case, the authors systematically discuss the different types of Viennese endangered habitat types especially according to their required legal and other governance interventions, particularly under the climate change related forest law regime and biodiversity conservation law (both especially against the background of the Natura 2000 scheme of the European Union).

The paper explains the logic and structure of the new framework and describes its theoretical applicability on conflicts of interests in general. Furthermore, the case study tested on the city of Vienna/Austria indicates also the practical applicability of the framework and offers different solution approaches *de lege lata* (how the law is) and *de lege ferenda* (how the law should be).

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1. Introduction

Climate change and biological diversity have been both prominently addressed by multilateral environmental agreements at the famous 1992 Rio Conference (Vaillancourt, 1993). The United Nations Framework Convention on Climate Change - UNFCCC (UN, 1992a; see also e.g. Paterson and Grubb, 1992) as well as the Convention on Biological Diversity - CBD (UN, 1992b; see also e.g. Swanson, 1999) adopted there, have been the results of a long history of global discussions and have become the most influential drivers for multilevel policy making in their respective fields during the past decades (Siebenhuner, 2007).

For climate change a wide range of public measures have been initiated most prominently expressed through the adoption of the Kyoto Protocol in 1997 based on the UNFCCC (UN, 1998; see e.g. Breidenich et al., 1998; Stocchero et al., 2017) and addressed by the protocols' parties in multiannual actions, but with quite limited success so far (Grunewald and Martinez-Zarzoso, 2016) cumulating in the successor Paris Agreement of 2016 (Clemencon, 2016).

Also regarding biological diversity including ecosystems, numerous policies and proposals for improved conservation including sustainable use have been brought forward since 1992, with significant successes, but overall still a consecutive negative trend can be found towards a continuous loss far beyond the naturally occurring extinction rates (Rockstrom et al., 2009).

The interlinkages between these two policies have been intensively discussed in the literature. The variety of contributions

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ranges from the need for effective mitigation measures in order to stop a further loss of biodiversity (see e.g. Nilsson and Persson, 2012), over efficient adaptation measures to reduce the inevitable loss as far as possible (see e.g. Stein et al., 2013), to questions on the relationship between biodiversity, climate change and bioenergy (see e.g. Meller et al., 2015; Giuntoli et al., 2015; Parajuli et al., 2017) and indirect effects such as stronger occurrence of invasive alien species due to increased average temperature (see e.g. Firn et al., 2015).

Much research focuses on win-win situations through co-benefits (e.g. Strassburg et al., 2012; Malico et al., 2016). But scholars have also highlighted conflicts of interest, when two groups want different things from the same habitat or species as one form of conflict (Young et al., 2010). This has been discussed in particular with regard to biodiversity conservation and climate change (Phelps et al., 2012). It relates, especially, to management measures that implement biodiversity conservation objectives and climate change objectives, respectively. While much of this discussion has concentrated on the topics related to reduced emissions from deforestation and degradation (REDD and REDD+) programs and bioenergy plantations (Fargione et al., 2009), some papers also address the temperate region and issues related to natural succession in terms of economic choice experiments (Shoyama et al., 2013).

The role of law has been far less assessed concerning conflicting interests between climate change and biodiversity conservation measures (but see e.g. Trouwborst, 2009), in particular with regard to the sub-national city level within a multilevel governance system. Thus, this paper assesses how to newly structure conflicts of interests based on different legal types of measures and assesses the practical applicability of such a newly structured framework on the example of a case study of the city of Vienna.

After briefly describing background information (section 2), this paper first provides a general overview of Vienna/Austria in natural sciences and law (section 3). After presenting the legal basics of Clean Air law, Biodiversity law including grassland related law and climate change related-forestry law for the city respectively, the paper concentrates on the relation between that forest law and protected habitat types. Based thereon, three types of normative conflicts of interests are used to structure the new framework (section 4). These are the conflicts between voluntary measures, between compulsory measures and between a voluntary and a compulsory measure, respectively related to conflicts of interest between climate change and biodiversity conservation. Then, the new framework is tested on the example of the city of Vienna (section 5). Practical implications are described and different solution approaches *de lege lata* (how the law is) as well as *de lege ferenda* (how the law should be) are offered. The paper ends with brief conclusions (section 6).

2. Background

The research approach chosen is qualitative and problem oriented. The sectors assessed (clean air, biodiversity conservation and forestry) by means of analyses of legal documents were purposively selected on the basis of existing conflicts among norms defining measures that enhance different environmental assets. The work is based on an in-depth literature review as well as on a natural science and legal overview leading to the development of an analytical framework and a case study testing this framework in particular related to different Viennese habitat types protected in so-called Natura 2000 sites under the prominent Habitat Directive of the European Union (EEC, 1992; EC,

2005). The focus on habitat types is selected as it concentrates the analysis on a clearly delimited geographic area in comparison to individual wild species which are much more mobile. The number of these habitat types is also much lower than the one of species, which makes the foreseeable interrelations of their conservation interest with climate change and other interests (especially forestry) manageable. For many species that occur in Vienna the effects of climate change are less foreseeable and predictable.

In the following, the general overview for the Viennese case study is presented covering aspects of legal and natural sciences. Based on a literature review, overviews of the natural conditions as well as of the three main legal sectors involved (clean air, biodiversity conservation and forestry including the legally relevant habitat types) are provided.

3. Vienna/Austria: natural and legal basics

The following overview presents general and specific aspects of the natural surrounding and the legal framework (including the protected habitat types) relevant for the city of Vienna.

3.1. General aspects about nature in Vienna/Austria

Austria is situated land-locked in central Europe with a size of about 83.000 km² and a population of about 8 million people. Its capital Vienna is located at the edge of the Northeastern part of the alpine region, alongside the largest river of the EU, the Danube, and at the edges of the continental as well as the Pannonian bio-geographical regions to the north and the east respectively. The concurrence of these three different landscapes and the riverside endows Vienna with a high biological diversity including a variety of habitat types, despite its size of only 414,6 km² and its appearance of a city populated by about 1,8 million people. Forestry takes place on the slope of the alpine region and alongside the Danube, except in certain zones of protected areas. Outside of the forests, grasslands and vineyards dominate in terms of agriculture.

3.2. General aspects about the legal framework in Vienna/Austria

Austria is a federal Republic with nine provinces (so-called 'Bundesländer') and since 1995 member of the European Union. The legislative competences to regulate legal areas related to the research topic of this paper are allocated to the federal as well as the province levels. Those areas are mainly clean air and forestry (both – mainly – under the legislative competence of the federal level) and biodiversity conservation (mainly under the legislated competence of the provincial level).

The third territorial entities with an own legislative power are the local communities (called 'Gemeinden'). There are also other administrative units called 'Bezirksverwaltungsbehörden'. They geographically comprise in most cases more than one 'Gemeinde' but only have competences in the implementation (not in the legislation). These 'Bezirksverwaltungsbehörden' implement law either on behalf of the federal level or the provincial level, and there exist other implementation units separated for all three levels (federal, province and 'Gemeinden').

In particular regarding clean air as well as biodiversity conservation the law of the European Union (EU) introduces a middle level of legislation within the described multi-level governance system of international and national law. The EU influences the national and sub-national level, but is itself influenced by the international legal framework already described (such as the UNFCCC and the CBD) after its ratification by the EU.

As already mentioned, the city of Vienna is the capital of Austria with – apart from its concentration regarding population as well as the cultural and political life within Austria – a unique legislative and administrative framework for Austria. Constitutionally, as Vienna represents also one of the nine provinces of the Austrian Republic as well as a ‘Gemeinde’, it has both, the legislative powers of a province and of a ‘Gemeinde’.

Additionally, the city of Vienna has an administrative unit called the ‘Magistrat’ with different departments which execute also the competences of a ‘Bezirksverwaltungsbehörde’ (besides the ones of a ‘Gemeinde’). Thus, the Magistrat of Vienna prepares provincial legislation as well as implements provincial legislation such as the one related to the biodiversity conservation and federal legislation such as the one related to clean air or the forestry sector.

3.3. Specific legal background

The law relevant to Vienna and related to both, measures against climate change as well as measures for biodiversity conservation, can contain different types of measures. Two main differentiations can be distinguished. Firstly, the law can encourage voluntary measures, partly supported by different kinds of economic incentives (such as subventions or tax credits), or prescribe binding norms supported usually by enforcement mechanism. In fact, combinations are also often common. Secondly, the law can ask for measures as an active contribution or as inaction.

Each of the legal provisions described in the following within the three subsections on clean air, biodiversity conservation and forestry can contain some or all types of these measures. The concrete legal formulations of the respective norms are of particular importance when conflicting interests occur, as shown in more details in the section afterwards.

3.3.1. Legal framework related to clean air

Article 10 paragraph 1 number 12 of the federal Austrian Constitution (‘Bundesverfassungs-Gesetz’ – short ‘B-VG’) (Austrian Parliament, 2017) allocates the legislative powers related to clean air to the federal level, notwithstanding the competences of the provinces to legislate heating constructions.

Furthermore, the provinces have the competence in the sense of a duty to implement the federal legislation which is mainly done by ordinances (‘Verordnungen’) that are addressing the general public and are binding.

Within this national context, the Austrian legal framework also aims to transpose and implement relevant EU-law such as:

- Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC (EC, 2003).
- Council Directive 89/106/EEC of 21 December 1988 on the approximation of law, regulations and administrative provisions of the Member States relating to construction products (EEC, 1988).
- Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on energy performance of buildings (EU, 2010).
- Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services and repealing Council Directive 93/76/EEC (EC, 2006).
- Directive 2009/28/EC of the European Parliament of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (EC, 2009).

- Directive 2011/42/EC of the European Parliament and of the Council of 27 June 2011 on the assessment of the effects of certain plans and programs on the environment (EC, 2011).

Each of these Directives can have a certain impact on biodiversity. Depending on the context, positive or negative effects that occur in a direct way or indirectly (through one or more feedback-loops) are possibly related to the biodiversity within the city of Vienna (and outside).

Similar effects can take place by legislative acts that are released based on the federal competences mentioned above. These acts are in particular:

- Green Electricity Act (Austrian Parliament, 2012).
- Implementation of the Aarhus Convention on the federal level (Austrian Parliament, 2005).
- Climate Protection Law: for securing the compliance of greenhouse gas emission (Austrian Parliament, 2011).
- Federal Constitutional Act on sustainability, animal protection, comprehensive environmental protection, on water and food security as well as research (Austrian Parliament, 2013).
- Energy efficiency Act (Austrian Parliament, 2014).
- Combined Heat and Power Generation Act (Austrian Parliament, 2008).
- Act on the Climate- and Energy fund (Austrian Parliament, 2007).
- Electricity Sector Act (Austrian Parliament, 1998).
- Ordinance of the Federal Minister for Science, Research and Economy on energy efficiency (Austrian Government, 2015).
- Ordinance of the Federal Minister for the introduction of intelligent measuring devices (Austrian Government, 2012).
- Draft amendment of the federal Environmental Information Act of 1993 (Austrian Parliament, 2016).

On the provincial level of the city of Vienna, further legislative acts and administrative ordinances have been issued such as:

- Provincial Ordinance for new constructions (Provincial Government, 2007).
- Ordinance for construction technology (Provincial Government, 2015).
- Federal Agreement on Measures regarding buildings in order to reduce greenhouse gas emissions (Provincial Parliament, 2009a).
- Provincial Law for Heating and air-conditioning systems (Provincial Parliament, 2009a,b).

Also these provincial legal provisions can have direct or indirect effects on biodiversity.

3.3.2. Legal framework related to conservation

Article 15 B-VG reserves the competence for the development and implementation of biodiversity conservation legislation exclusively for the nine Austrian provinces (‘Bundesländer’¹). Thus, no specific biodiversity conservation law exists at the federal level (see for details e.g. Mauerhofer, 2008a).

A certain harmonization among the nine provincial legislations has occurred based on the EU-law, in particular the ‘Birds-Directive’ (EEC, 1979) and the Habitats Directive (EEC, 1992; Mauerhofer, 2008a). Both Directives establish particular conservation and

¹ Burgenland – Carinthia, Kärnten – Carinthia, Niederösterreich – Lower Austria, Oberösterreich – Upper Austria, Salzburg – Salzburg, Steiermark – Styria, Tirol – Tyrol, Vorarlberg – Vorarlberg, Wien – Vienna.

maintenance duties in- and outside of protected areas. The duties and the implementation steps taken by the city of Vienna as one of the nine Austrian provinces will be described later more in detail below.

Article 3 of the Habitat Directive obliges the Member States of the EU to establish a network of protected areas called Natura 2000 on behalf of certain habitat types (and wild animal and plant species) and to maintain and restore their favourable conservation status (Art 1e in [EEC, 1992](#); [Mauerhofer, 2008a](#)). Furthermore, Article 6 (1) of the Habitats Directives obliges Member States of the EU to establish for these sites

“the necessary conservation measures involving, if need be, appropriate management plans specifically designed for the sites or integrated into other development plans, and appropriate statutory, administrative or contractual measures which correspond to the ecological requirements of the natural habitat types in Annex I ... present on the sites”.

The Court of Justice of the European Union ([CJEU, 2005](#) para. 34) has interpreted this obligation in a case against the United Kingdom (UK) so that

“... it may be necessary to adopt both measures intended to avoid external man-caused impairment and disturbance and measures to prevent natural developments that may cause the conservation status of species and habitats ... to deteriorate”

And, thus, dismissed UK's arguments that

“.... only ‘non-natural’ deterioration, resulting, for example, from poor husbandry, is to be avoided and not natural deterioration, for example climate change or flooding due to a rise in sea level.” ([CJEU, 2005](#) para. 17)

Furthermore, Article 6 (2)–(4) of the Habitats Directive contains an Appropriate Assessment regime for certain plans and projects

likely to have a significant effect on the site protected on behalf of the habitat types and wild species.

The provincial parliament of Vienna and the Viennese ‘Magistrat’ have addressed these duties – as the mainly competent legislative and executive authorities for the territory of Vienna – through the release of numerous legal documents, namely.

1. The Nature Conservation Act (Nature protection and Management Law) ([Provincial Parliament, 1985](#))
2. The Nature Conservation Ordinance (Naturschutzverordnung) ([Provincial Government, 1985](#))

These transposition and implementation duties regarding protected areas led in Vienna also to the legally binding designation of the following four Natura 2000 sites as Specially Protected Areas (SPAs):

1. Ordinance Natura 2000 area Bisamberg = ‘Natura 2000 Gebiet Bisamberg’ (in short ‘SPA Bisamberg’) (340 ha) ([Provincial Government, 2016a](#)).
2. Ordinance Nationalpark Donauauen (Viennese Part) = ‘Nationalpark Donauauen (Wiener Teil)’ (in short SPA ‘NP. Donauauen’) (2258 ha) ([Provincial Government, 2016b](#)).
3. Ordinance Nature reserve Lainzer Tiergarten = ‘Naturschutzgebiet Lainzer Tiergarten’ (in short ‘SPA Lainzer Tiergarten’) (2259 ha) ([Provincial Government, 2016c](#)).
4. Ordinance Landscape protection area Liesing (part A, B and C) = ‘Landschaftsschutzgebiet Liesing’ (Teil A, B und C) (in short ‘SPA Liesing’) (639 ha) ([Provincial Government, 2016d](#)).

These sites were designated in order to protect the following 22 habitat types including 9 ‘priority protected ones’ indicated by “*” (apart from particular species of plants, birds and other animals, which are not in the focus of this paper) ([Table 1](#)).

Among the 22 habitat types are three fresh water types (with “3” as first number in the first column of [Table 1](#)), six semi-natural

Table 1
Viennese habitat types and their coverage by Natura 2000 Special Area of Conservation (SACs) ([European Environment Agency, 2016](#)).

Code and habitat type	SPA Bisamberg	NP. Donauauen	SPA Lainzer Tiergarten	SPA Liesing
3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoetes-Nanojuncetea		x		
3140 Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.		x		
3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition- type vegetation		x		
6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (important orchid sites)	x	x	x	x
*6230 Species-rich Nardus grasslands, on siliceous substrates in mountain areas (and submountain areas in Continental Europe)			x	
*6240 Sub-Pannonic steppic grasslands	x	x		
6410 Molinia meadows on calcareous, peaty or clayey- silt- laden soil (<i>Molinia caerulea</i>)			x	x
6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels			x	
6510 Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>)	x		x	x
7230 Alkaline fens		x	x	x
*8160 Medio-European calcareous scree of hill and montane levels				x
9110 Luzulo-Fagetum beech forests			x	x
9130 Asperulo-Fagetum beech forests			x	x
9150 Medio-European limestone beech forests of the Cephalantho-Fagion				x
9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests of the Carpinion betuli	x			x
9170 Galio-Carpinetum oak-hornbeam forests	x		x	x
*9180 Tilio-Acerion forests of slopes, screes and ravines			x	x
*91E0 Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)		x	x	x
91F0 Riparian mixed forests of <i>Quercus robur</i> , <i>Ulmus laevis</i> and <i>Ulmus minor</i> , <i>Fraxinus excelsior</i> or <i>Fraxinus angustifolia</i> , along the great rivers (<i>Ulmion minoris</i>)		x		
*91G0 Pannonic woods with <i>Quercus petraea</i> and <i>Carpinus betulus</i>	x		x	x
*91H0 Pannonic woods with <i>Quercus pubescens</i>				x
*9530 (Sub-) Mediterranean pine forests with endemic black pines				x

grassland types (with “6” as first number), one type belonging to raised bogs, mires and fens (with “7” as first number), one rocky type (with “8” as first number) and 11 types of forests (with “9” as first number) (see Annex 1 of [EEC, 1992](#)). Besides the protection of sites, both Directives contain also rules regarding the protection of species which protect a certain space (such as nesting grounds; see especially Art. 12 (1) lit. d [EEC, 1992](#) and Art. 5 lit. b [EEC, 1979](#)). But those norms are not of particular interest for this paper as that space may change every year.

3.3.3. Legal framework related to forestry

Measures against climate change and on behalf of biodiversity conservation do not constitute the main content of the Austrian legal framework related to forestry due to the competence distribution in the Austrian Constitution. Furthermore like the clean air competence already described, the forestry competence is also based in Article 10 paragraph 1 B-VG, but under a different number (10). In addition, compared to the legal frameworks related to clean air and biodiversity conservation, the forestry sector is not that much influenced by EU law ([Mauerhofer, 2012](#)).

Nevertheless, the forest law sees itself as a normative basis that ensures the multi-functionality of Austrian forests; also international processes within the forestry sector during the past decades have led to a strong expression of terms relating to sustainable development in 2001 in the main normative act ([Mauerhofer, 2008b, 2012](#)), the federal Austrian Forest Act 1975 ([Austrian Parliament, 1975](#)). This Act expresses the public interest in the use and conservation of Austrian forests. Article 1, paragraph 3 of this Act statutes in an overall way the goal of forestry as (authors's translation)

“the care and use of the forest in a way and to the extent that the biological diversity, productivity, regeneration ability, viability and potential of the forest is sustainably maintained in order to fulfill, today, and in the future, ecological, economic and social functions on the local, national and global level without harming other ecosystems.”

Among the ‘ecological functions’ are also the functions helping to mitigate against or to adapt to climate change. Article 6 (2) of the Forest Act then distinguishes these ecological, economic and social functions into use effect (so-called *Nutzwirkung*), protection effect (so-called *Schutzwirkung*), welfare effect (so-called *Wohlfahrtswirkung*) and recreation effect (*Erholungswirkung*), and describes them in more detail.

Following the adoption of the Forest Act, an Ordinance (generally based on that Act) from 1977 on the forest development plan ([Austrian Government, 1977](#)) explicitly laid down the use effect as a precondition for the other three effect modes, giving priority to use effect where not otherwise stated ([Kalss, 1990](#)). This happened without any basis in that Forest Act ([Kalss, 1990](#)) and therefore can be annulled based on Art. 139 B-VG by the Austrian Constitutional Court ([Kalss, 1990](#)). Such an (durable) unlawful priority setting provides also an indication of the non-priority status of climate change issues within the function and effect hierarchy of the Austrian Forest Act ([Mauerhofer, 2008b, 2012](#)).

Prior to 2002 the Austrian Forest Act included certain obligations of forest owners which contradicted conservation aims without an opportunity of an exemption on behalf of biodiversity conservation objectives. These duties are derived from prohibitions and instructions, both under sanction, and especially comprise.

- to afforest clear-cuts or other area of former forest (but with a choice to try rejuvenation) (Article 13 Forest Act);
- to prevent forest devastation („Waldverwüstung“) through action/inaction (Article 16 Forest Act);
- not to cut forest without prior permission and paying for compensatory afforestation elsewhere (Article 17 Forest Act);
- to manage forests with protective function, especially for human settlements (Article 22 Forest Act);
- to implement phytosanitary measures in order to reduce the spread of bark beetles (Article 44–45 Forest Act);
- not to cut high stands of forests prior to a certain age (Article 80 Forest Act);
- to be as an owner liable in case of trees hurting somebody on paths in the forest (Article 176 Forest Act) (own translation of the author).

These obligations are still in force but in 2002, an amendment of the Forest Act was adopted, also under the pressure of the duties under Article 6 (1) of the Habitats Directive (described above). A new Article 32a of the Forest Act was inserted that left some scope for not executing some of these duties for the benefit of biodiversity conservation. It did so by allowing conservation authorities to apply in advance for exemptions from these federal prescriptions on behalf of measures implementing biodiversity conservation objectives, but only with prior permission from the owner ([Mauerhofer, 2016a, b](#); [Mauerhofer et al., 2016](#); [Kohl and Pekny, 2011](#)).

Now the detailed analysis of the different conflicts of interests is done by developing a framework that covers conflicting situations between actions and inactions as well as allowing for an additional differentiation between voluntary and compulsory measures.

4. General framework for the assessment of conflicts of interests among laws

Above, two main differentiations have been already made, namely norms related to voluntary and compulsory measures as well as norms prescribing an action or inaction. The norms can be of various geopolitical origin(s), namely local, provincial, national and/or supranational (EU or beyond) and usually the norms from the higher geopolitical level predetermine within the scope of their content the norms from the lower level. With regard to both differentiations, the following scheme can be developed in relation to conflicts of interests ([Table 2](#)).

Withstanding norms can have one and the same addressee or different addressees. Former leads to a conflict of interests within one person, latter to such a conflict among several persons. Based on [Table 2](#) thereon, in the following, some general issues related to voluntary and compulsory measures respectively are discussed related to climate change and biodiversity conservation measures.

Withstanding norms related to sole voluntary measures for example against climate change and on behalf of biodiversity conservation can cause conflicts of interests. These are represented in the cases A. and B. as well as E. and F. in [Table 2](#). In these cases no sanction is applied by administrative law.² Thus, if one stakeholder is addressed by both norms, the stakeholder is free to comply with any norm or none of them (e.g. apply the conservation measure subsidized or the climate change measure subsidized; but it is not possible to follow both of them, thus e.g., apply for both subsidies and implement both measures).

² Civil law and penal law might apply if withstanding incentives are consumed by one and the same person.

Table 2

Framework for sixteen cases of withstanding activities (adapted from Mauerhofer and Essl, 2016).

		Voluntary biodiversity conservation measure		Compulsory biodiversity conservation measure	
		Action	Inaction	Action	Inaction
Voluntary climate change measure	Action	case A	case B	case C	case D
	Inaction	case E	case F	case G	case H
Compulsory climate change measure	Action	case I	case J	case K	case L
	Inaction	case M	case N	case O	case P

If the conflicting norms that can solely be implemented by voluntary measures address different stakeholders, the situation gets more complicated.³ All stakeholders cannot voluntarily implement their measure, fully or even partly. Nobody gets sanctioned thereby. If all stakeholders decide not to go forward with their measure, no conflict of interest comes into existence. Neither measures against climate change nor measures on behalf of biodiversity conservation are set. If only one of the stakeholders decides to voluntarily take the measure, but the others do not, also no conflict of interests occurs. But a measure gets set and perhaps even prevails in future fully or partly over the –measures potentially later to be implemented that support the other interest.

5. Conflicts of interests between climate change and conservation measures in Vienna

The following assessment now applies the framework to the Viennese situation and therefore focusses on the geographic area of Vienna. More concretely, the analysis concentrates on effects that occur within the boundaries of Vienna. Thus, conflicts of interests between measures against climate change and measures on behalf of biodiversity conservation are not covered that have their geographic origin in Vienna but where the effects take place beyond the Viennese borders. Examples would be carbon-offset measures by Viennese stakeholders (e.g. public sector, companies) such as for the creation of a hydro-dam or a bioenergy plantation somewhere beyond the Viennese borders that effect biodiversity there.

5.1. Overview of the main threats to Viennese habitat types

The favourable conservation status prescribed by the Habitats Directive has to be maintained or restored for all 22 Viennese habitat types and necessary measures therefore have to be executed (See Article 3 (1) and Article 6 (1) of EEC, 1992).

5.1.1. Unnatural or natural succession threats to Viennese habitat types

The 22 habitat types listed in Table 1 can be subject to unnatural succession (e.g. through the process of nitrification; see e.g. Rockstrom et al., 2009) or other unnatural effects such as through climate change. Based on the EU-jurisdiction mentioned above, it may be necessary to adopt also measures intended to avoid such external man-caused impairment and disturbance (CJEU, 2005 para. 34).

Only the six semi-natural grassland types out of the 22 types are as such dependent on a certain and regular human

intervention, and in case of full abandonment or reduced use the natural succession follows. However, the succession of vegetation on land not covered by forests is widely considered yet to contribute to the mitigation of or adaptation to climate change, due to the additional carbon sequestration by (higher and denser) vegetation (Vuichard et al., 2008). Biofuel plantations on abandoned agricultural land are also considered by some scholars a more eco-friendly option in comparison to clearing of yet undisturbed land (Fargione et al., 2008). But Hall et al. (2012, p. 1135) conclude in their case study “that an increase in forest area does not necessarily imply an increased provision of ecosystem services when landscapes are reforesting with monoculture plantations of exotic tree species.”

In any way, agricultural land can have valuable qualities on behalf of biodiversity such as indicated by the inclusion of six semi-natural grassland habitat types into the Habitats Directives, which occur also in Vienna. Abandoning these grassland types will likely lead to natural succession, reduce these qualities (Mauerhofer et al. 2018) and definitely trigger some compulsory measures under the EU-enforcement scheme to maintain or restore the favourable conservation status of these grassland types. Hence maintaining or restoring such grassland through conservation management measures supports attaining biodiversity goals (Mauerhofer et al. 2018) but can withstand measures which would contribute to adapting to or mitigating of climate change.

5.1.2. The (intensive) use threat to Viennese habitat types

The extent to which human intervention and a favourable conservation status exclude each other varies among the 16 Viennese habitats types covered by the Habitats Directive which do not belong to the grasslands types.

Numerous of the 11 forest habitat types in Vienna are still used, even if not all commercially. Several of them belong for example to the group of beech forests which are found also for Austria in general to be hardly influenced by (voluntary) Natura 2000 management plans that are widely fail to reflect recommendations by conservation scientists (Winter et al., 2014).

This situation can in particular differ for beech forests within the city of Vienna because the local authority of Vienna is the largest land owner in Vienna and owns most of the land which is located within the Viennese Natura 2000 sites listed in Table 1. Additionally, such as already mentioned, Vienna as provincial authority also implements the federal forestry law (besides the provincial conservation law).

These circumstances make the case of Vienna quite particular and conflicts of interests less probable. Besides those (partly too heavily) used Austrian forest habitat types, there are forest habitat types in Vienna – additionally to their location inside a Natural 2000 site – occurring inside of protected area sites where formally any commercial use is excluded. Examples are the partly in Vienna located National Park Danube River and the virgin forest nature reserve ‘Johannser Kogel’, both with wilderness qualities (Mauerhofer et al., 2016; Mauerhofer, 2016a).

Management measures for these types of protected areas mainly (if at all) aim to prevent any liability based on Article 176 Forestry Act (Austrian Parliament, 1975) of the forest owner (usually the Viennese Public Authority itself) for accidental damages to visitors using the paths from trees or parts thereof from falling down. These management measures are aiming to preventively cut down trees or parts thereof – usually without a compensating afforestation nearby – and can therefore be often considered to withstand the goals of a climate change policy.

³ Such a situation is not likely in Vienna as all the property rights (especially ownership, management rights) are mainly in the hands of Vienna.

5.2. Particular issues related to legal conflicts of interests

5.2.1. Conflicting voluntary measures in Vienna

With regard to the relevant 22 Viennese habitat types within Natura 2000, the type of a conflict of purely voluntary measures (see Table 2, cases A-E and I-N) does not easily seem possible because of the obligations laid down by the Habitats Directive. Thus, even if two voluntary incentive schemes would conflict each other, the conservation scheme is always backed by the concrete – overwhelming – EU-duty to maintain or restore a favourable conservation status by the necessary measures. A different conclusion might be applicable if a favourable status already exists and is not threatened by the climate change addressing measure (but perhaps to be decided in advance by an Appropriate Assessment). Other examples are imaginable rather outside the scope of the Habitats Directive. One example could be financial incentives proposed by conservation authorities to a farmer for voluntarily cutting invasive trees out of dry meadows without legal status of a protected site while the forest authority offers money for letting these trees grow in order to increase the forested area and carbon storage capacity of the land. Hence, the choice lies with the farmer as none of the public authorities respectively has a binding means to force the farmer.

5.2.2. Conflicting compulsory measures in Vienna

These situations reflect the cases K. and L. as well as O. and P. in Table 2 above. Regarding the habitat types within the scope of this study, conflicts among compulsory measures are less common with the climate change legislation in Vienna. For example, biomass afforestation is not occurring on a large scale in the few agricultural areas of Vienna and the habitat types occur mainly in areas, which are inappropriate for such afforestation. Moreover, such afforestation would probably need an Appropriate Assessment based on Article 6 (2)–(4) Habitats Directive.

With regard to the species conservation norms of the Habitat Directive as well as the Birds Directive some cases of conflicting interest are foreseeable, especially regarding birds and bats breeding in old buildings that are subject to energy saving measures. But these situations lay outside the scope of this paper due to its focus on habitats conservation. Nevertheless, the scheme of Table 2 would be also applicable on species conservation.

More direct cases of conflicting interests other than with the climate change legal framework described above occur with the federal legal framework also applicable to Vienna regarding forests that – such as shown – also encompasses the climate function of forests among the ecological functions to be enhanced by that framework. Different cases are imaginable.

One law stipulates a measure on behalf of biodiversity conservation in a binding way together with an enforceable sanction, while another law stipulates a measure against climate change in a binding way together with an enforceable sanction, and vice versa. Both measures – which could be actions or inactions respectively – are excluding each other in their implementation. The (provincial) legal conservation framework mentioned above related to the city of Vienna for example can prescribe management measures in form of an action reducing natural succession for one of the six semi-natural grassland habitat types. The (federal) legal forestry framework for example forbids in general the cutting of – even successional states – forest (Article 17 in Austrian Parliament, 1975) and therefore prescribes for the same area of the city an inaction (Situation 1 represented by Case O in Fig. 1). However, active measures on grassland habitat types are often backed in Austria by financial incentives or volunteer work.

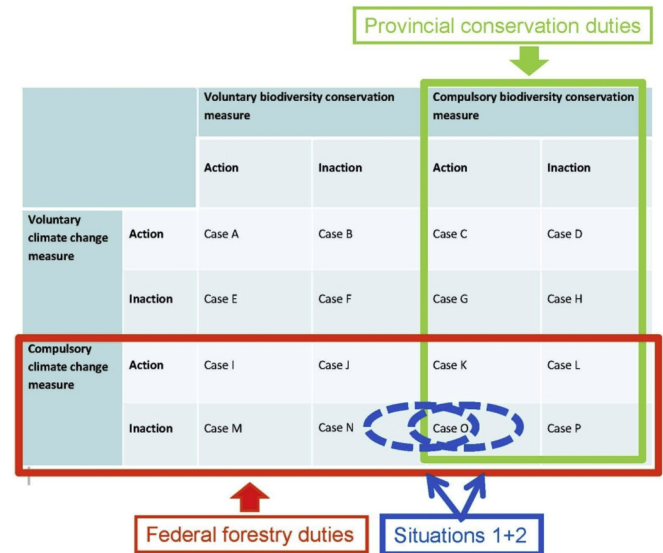


Fig. 1. Two situations of conflicting compulsory measures among the Austrian federal forestry legislation and provincial climate change legislation related to climate change.

Also a “Case O” situation occurs if measures are planned to maintain/restore the favourable conservation status of a forest habitat type e.g. by clearing older artificial afforestation and to foster in that way a younger state below the rejuvenation of this other forest habitat type (Situation 2 represented by Case O in Fig. 1). Meanwhile a norm of the forest legal framework prohibits such clear-cutting of higher stands of forest prior up to a certain age (Article 80 in Austrian Parliament, 1975). Thus, it gives primacy to inaction on behalf of the artificial afforestation that in terms of climate change might currently sequester more carbon. This situation happened in the Lower Austrian part of the National Park Donau Auen (Mauerhofer, 1998 p. 205).

In all cases where the forestry legal framework stipulates a certain action or just enables an inaction (Cases K. and L. in Table 2), the implementation of an Appropriate Assessment in the sense of Article 6 (2)–(4) of the Habitat Directive could be necessary for these activities (actions and inactions). Such a situation could occur if e.g. based on Article 13 Forest Act artificial afforestation would be ordered while nature conservation requirements stipulate a longer period for natural rejuvenation than allowed by Article 13 of the Forest Act (Case L). Or one legal system orders the afforestation with a certain tree species, and the other one with a different tree species (Case K).

In all these cases regarding biodiversity conservation the necessary measures have to be taken based on EU-law and, thus in general, such legal prescriptions based on the Habitats Directive prevail due to the superiority of the EU law in comparison to solely national or subnational law (Mauerhofer, 2001). The 2002 newly introduced Article 32a of the Forest Act mentioned above should have brought easement for Austria and the city of Vienna. But this law has several deficiencies regarding EU-law, as well as national constitutional law, due to the requirement that for exemptions from duties under this law the prior permission by the forest owner is necessary (Mauerhofer, 2016a). Although unlawful, these deficiencies are in practice with regard to Vienna less problematic due to the described congregation of several functions within the Magistrat of Vienna. The nature conservation department of the Magistrat of Vienna is also the provincial biodiversity conservation authority which would have to request at the department of forestry of the Magistrat of Vienna

(acting on behalf of the federal level as the forest law implementing authority) for exemptions. Furthermore, Vienna as local authority (“Gemeinde”) is also (in most of the sites) the forest owner who would need to give the prior permission for such an exemption.

For the Case P of conflicting compulsory inactions, no example for a compulsory climate change measure and a compulsory biodiversity conservation measure could be found in this Viennese case study. Situations slightly touching this case P take place where inactions would be required subsequently for the same site but then they might not be considered conflicting due to the time difference.

A situation wherein the biodiversity conservation measure would be the “more effective” climate change measure is for example when the Habitats Directive stipulates to maintain a certain forest type; while the forest legal framework holds also an owner liable in case of trees hurting somebody on the paths in the forest (Article 176 Forest Act). This framework encourages (but not obliges) to preventively cut down such trees (but actually an Appropriate Assessment under the Habitats Directive could be required). Similar is valid for all situations wherein biodiversity conservation law protects forests and forest law provides opportunities or stipulates direct duties to clear trees.

5.2.3. Compulsory and voluntary measures conflicting

These situations reflect the remaining cases in Table 2, namely C., D., G., H., I., J., M. and N. They can be solved quite straight forward in relation to the Viennese habitat types protected under the Habitats Directive.

The first four cases (C., D., G., H.) contain in a compulsory manner necessary biodiversity conservation measures and therefore prevail in comparison to voluntary climate change measures. Situations with pure voluntary biodiversity conservation measures (Cases I., J., M. and N.) are hardly imaginable with regard to the Viennese habitat types addressed by this paper. These types are usually covered by the duty to maintain or restore the favourable conservation status such as prescribed under the Habitats Directive. Whether a conservation status is already restored or maintained, is a technical question that goes beyond the scope of this paper. However, for additional voluntary measures planned beyond a favourable status that conflict with compulsory climate change addressing measures, the results might be different.

6. Conclusions

Climate change and nature conservation are prominent issues also with regard to urban areas (de Koning et al., 2014). Cities such as Vienna play a particular role in solving challenging conflicts of interests among management measures which try to implement management measures related to objectives of these two issues. The legal framework directly addressing climate change proved to be less manifest for conflicts of interests with EU-relevant habitat conservation within Vienna. The results are different concerning the relevant legal frameworks of biodiversity conservation on the one hand and forestry on the other hand. Required management measures under the more ecocentric-oriented Biodiversity Conservation and the more anthropocentric-oriented forest law addressing inter alia also climate law can exclude each other or be mutually supportive. Conflicts of interest among these sectors are manifold such as shown in this paper. Sixteen main situations are in particular distinguished of which the clash among obligatory measures is of specific interest for support to decision making. In the case of involvement of EU-law such as the Habitats Directive and the

Birds Directive, conflicts of interests can be easily solved based on EU law under the principle of the priority of EU law. Additionally, EU law has – despite some efforts – still to be fully transposed into the Austrian federal forestry legislation which would also ease the situation of conflicting interests.

Under these circumstances, as the current paper shows, the situation in the city of Vienna is in particular of advantage due to its specific position within the Austrian multilevel governance system. Moreover, this city holds – due to its size and political importance as capital – several positions such as the legislative body regarding nature conservation, the administrative unit implementing nature conservation law as well as the federal forestry law, and the land owner. This eases the situation concerning apparent conflicts of interests among climate change mitigation/adaptation on the one hand and biodiversity conservation on the other hand as well as provides the basis for a correct implementation of the binding EU law. However, this does not discharge the federal level from the duty of a correct transposition of EU-law within the forestry act.

In summary, the innovative framework presented in the paper provides an analytical tool to newly structure trade-offs in general related to conflicts of interests and it proves applicable on conflicting measures in practice between climate change and biodiversity conservation laws when tested based on a case study of a city embedded in a global-local governance context.

The framework is in its geographical application range neither limited to urban areas nor to the so-called global north. Furthermore, is not solely applicable to the fields of conservation and forestry measures but all kind of conflicts. The generality of the criteria for the measures applied (voluntary versus compulsory and action versus inaction) supports a wide use and implementation of the framework on a broad range of topics and tools which are representing conflicting interests. In this way, the approach presented in this paper provides a globally valuable instrument for structuring withstanding interests and their implementing measures and for facilitating the search for practical solutions.

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